

NEW CLAIMS:



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9. A free draining throttling valve comprising:

- (a) a valve body defining an inlet and an outlet;
- 5 (b) a throttling surface between said inlet and outlet, said throttling surface comprising a island having a generally annular peripheral surface;
- (c) a diaphragm having a primary surface and a secondary surface, said surfaces being spaced-apart and being joined at peripheral edges to form an internal diaphragm volume chamber;
- 10 (d) said primary surface defining a mating throttling surface engageable with said island;
- (e) drive means on said diaphragm;
- (f) operator means cooperable with said drive means for selectively positioning said diaphragm between an open flow control position in which a throttling gap is
- 15 established in which a linear pressure drop occurs with increasing flow velocity and a flow blocking position in which the primary diaphragm closes off flow at said island.

10. The valve of Claim 9 wherein a weep hole extends through said valve body into said

20 diaphragm chamber.

11. The valve of Claim 9 wherein said island has tapered side walls and said throttling gap is between said side walls and said throttling surface.

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12. The valve of Claim 9 wherein said drive means comprises a threaded shaft on said diaphragm and wherein said operator means comprises a motor driven rotor in threaded engagement with said drive means.

5 13. The valve Claim 9 wherein said rotor is mounted in thrust bearings captured between the rotor and housing.

14. The valve of Claim 9 wherein the valve body is a corrosive chemical resistant material.

10 15. The valve of Claim 9 wherein said body has an upper and lower section and said diaphragm is retained therebetween at said edge of said diaphragm.

16. The valve of Claim 12 wherein the motor is a stepper motor.

15 17. The valve of Claim 9 wherein said rotor is biased to provide a pre-load to oppose fluid pressure.

18. The valve of Claim 9 wherein said diaphragm surfaces are provided with annular ripples that deform as the diaphragm flexes.

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